REMARKS

The Examiner is thanked for the comments in the Action. They have helped us considerably in understanding her rationale therein and in drafting this Response thereto.

It is our understanding that claims 1, 4-5 7-10, 12-22, 24-25, and 28-29 remain pending in this application. Claims 2-3, 6 (previously), 11, 23, 26-27, and 30-31 have been canceled and claims 1, 9, 12, 17, 24, and 28 have been amended for reasons specifically remarked upon, below. And claims 20-21 have been acknowledged by the Examiner as being directed to allowable subject matter.

Item 1 (§ 102 rejections based on Grann):

Claims 1, 2, 4, 5, 7-10, 17, 18 and 23-25 are rejected as being anticipated by Grann.

Claims 1, 9, 17 and 24 are amended. In claim 1, the "*optically two-dimensional*" limitation previously appeared in dependent claim 2 (now canceled as redundant); the "*cell-to-cell optical separations*" limitation previously appeared in dependent claim 5 (where it remains and is further limited); and the "*surface-to-surface optical separations*" limitation previously appeared in dependent claim 7 (where it also remains and is further limited).

Claim 9 is amend by removing a limitation that is redundant in view of the amendment to parent claim 1. Claim 24 is amend to now depend from claim 17 instead of canceled clam 23.

In claim 17, the "*optically active in two-dimensions*" limitation previously appeared in dependent claim 23 (now canceled as redundant); and the "*cell-to-cell separations*" and "*surface-to-surface separations*" limitations previously appeared in dependent claim 24 (where they remains and are further limited).

Turning now to the language of the Action, we urge that claims 1, 4, 5, 7-10, 17, 18 and 24-25 are allowable in view of these amendments and the following clarifications of points of confusion and miss interpretation remaining.

The Action states: "*In Figure 1, Grann et al. discloses ... a grid of cells (12) within the background region; ....*" In our prior response, at pg. 4, ln. 11-15, we noted that the "*stacked arrays*" that Grann discusses (in FIG. 1 which it labels "*Prior Art*") is not a grid of cells. This should be moot in view of the amendment claim 1 or clarified by the following.

The Action continues, apparently discussing the aspect of claim 2 now incorporated into claim, " *wherein the grid is two-dimensional, thereby making the optical grating a planar*

grating; ...." However, this overlooks that in the claimed invention "*said grid is optically two-dimensional ....*" Ignoring its minor dimension, the grating structure of FIG. 1 of Grann can loosely be spoken of as being physically two-dimensional or planar in shape. Nevertheless, it is optically one-dimensional; it acts upon light with respect to exactly one wavelength/dimension, using intra groove-insert surface-to-surface separation. Accordingly, Grann's optically one-dimensional grating structure is not equivalent to the optical grating of the claimed invention.

The Action continues, "*Figure 3 of Grann et al. discloses an optical grating (20) comprising: - an array of the optical gratings disclosed in Figure 1; - a plurality of cells forming each planar grating in the array of optical gratings; ...* (emphasis added)." Yes – FIG. 3 of Grann teaches a plurality of gratings aggregated together, not a single grating having "*a grid*" (singular) of cells. Grann also teaches that each of its plurality of gratings acts upon light with respect to only one wavelength/dimension at a time.

The Action continues, "*... wherein the grid formed by the array of optical gratings of Figure 1 is three-dimensional, thereby making a cubical grating; ...*" There has been confusion in this prosecution between the physical dimensions of gratings and the optically active ones, and this is a major example. The grating structure (10) in FIG. 1 is physically three-dimensional, like all physical objects, but it is optically "one-dimensional." It acts on only one characteristic of light, by reflecting one specific wavelength in the direction of the up-pointing arrow and passing all others. The claimed invention acts concurrently with at least two characteristics of light, and is thus distinguished from Grann.

The Action continues, relying on FIG. 3 of Grann, "*... wherein the planar gratings receive/transmit light of multiple wavelengths in one direction and output light of one particular wavelength in a second direction, and are therefore, optically two-dimensional.*" The Examiner's argument that each grating structure of Grann acts on multiple wavelengths, by reflecting one and passing others, is specious. One of reasonable skill in the art here will readily appreciate that the prior art grating structures of Grann act on one wavelength, and take no action with respect to any others. By analogy, a window does not "*act*" on light passing through it; a filter does.

The Action continues,

> *Regarding claims 5, 7 and 8; the plurality of cells forming each planar grating (interference filter) each have a set of surface-to-surface and a set of cell-to-cell separations that constructively interfere for a pre-determined light wavelength when it is present in the light beam (see Figure 3), .. and the incident*

> *surfaces and respective opposed surfaces have surface-to-surface optical separations such that the reflected and refracted beams will constructively interfere for a light wavelength when it is present in the light beam, wherein the plurality of cells have cell-to-cell separations such that the reflected beams will also constructively interfere for the light wavelength.*

Respectfully, Grann does not teach this combination. In FIG. 3 (using Grann's own terminology), the "*parallel grooves*" obviously have some groove-to-groove separation and each "*insert*" in its grooves obviously has respective surface-to-surface separations. However, nothing in FIG. 3 taken alone, indicates that these are both tailored to cause constructive interference at a pre-determined wavelength. Examining FIG. 1 might be more helpful here, since the "*device 20*" in FIG. 3 is a plurality (10a-e) of the "*grating structures 10*" in FIG. 1. But FIG. 1 also does not show any details of the groove-to-groove separations and, even if it did, such would not cause constructive interference in the optical signals shown. It follows that Grann does not teach groove-to-groove interference in FIG. 1 or FIG. 3.

The Action continues, "*Regarding claims 9, 10, 24 and 25; the planar gratings receive/transmit light of multiple wavelengths in one direction and output light of one particular wavelength in a second direction, and are therefore, optically two-dimensional ....*" Again, no. In Grann, the light travels in two physical dimensions but it is optically acted on in only one in any given grating structure (10, 10a-e). At each structure one wavelength is reflected and all others are passed. The wavelength that is reflected is the one acted on, but it is acted on using only one type of action. The mere act of reflection does not change or employ the characteristics of the reflected light. It merely changes the physical direction in which it travels.

The Action continues,

> *... And, the plurality of cells forming each planar grating (interference filter) each have a set of surface-to-surface and set of cell-to-cell separations that constructively interfere for a pre-determined light wavelength when it is present in the light beam (see Figure 3). Thus,*
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> *- the cells forming the first planar grating (10a) have a first set of surface-to-surface and a first set of cell-to-cell separations such that constructive interference occurs for a first pre-determined light wavelength (λl) when it is present in the light beam; and*
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> *- the cells forming the second planar grating (l0b) have a second set of surface-to-surface separations and a second set of cell-to-cell separations such that constructive interference will occur for a second light wavelength (λ2) when it is present in the light beam.* (emphasis added)

Firstly, this miss interprets Grann. As discussed above, Grann does not teach intra-insert surface-to-surface separation and groove-to-groove separation both for constructive interference.

Secondly, this correctly indicates that Grann uses a first grating structure (10a) for one wavelength (λ1) and a second grating structure (10b) for another wavelength (λ2) – but this does not read on the subject claims. The claims are drawn to a grid of cells (singular) that have a first set of surface-to-surface separations and a first set of cell-to-cell separations. Consider FIG. 12 of the application. Callouts 608 and 612 depict two surface-to-surface separations that may be the same or different, see e.g., the rectangular cells 854 in FIG. 19. Those surface-to-surface separations both may or may not be tailored for constructive interference at specific light wavelengths. And when both are, this may be for the same or different wavelengths. Callouts 610 and 614 in FIG. 12 depict two cell-to-cell separations that also may be the same or different. Both may or may not be tailored for constructive interference at specific light wavelengths, and both may be for the same or different wavelengths.

Item 2 (§ 102 rejections based on Allan):

Claims 1, 3, 11-14, 17 and 26-31 are rejected as being anticipated by Allan. Respectfully, while we acknowledge that Allen is "*interesting*," we urge that it is interpreted too broadly to read on all of these claims.

Claims 3, 11, 26-27, and 30-31 are canceled.

Claim 12 is amended by adding to it some subject matter of claim 11, and making it instead depend on claim 1. Claim 28 is amended by adding to it some subject matter of canceled claim 27, and making it instead depend on claim 17.

Allan is limited by how its specific manufacturing technique inherently shapes its cells. The technique used cannot construct cells having multiple, different surface-to-surface separations. As figure 1 of Allan shows, its cells have a single surface due to their spherical shape. Its only surface-to-surface separation thus is its cell diameter. In contrast, Applicant's cells may usefully have one, two or three different surface-to-surface separations, as well as one, two or three different cell-to-cell separations.

Claims 13 and 29 have been left as original because they already contain features that avoid Allan. In view of the above, we urge that claims 1, 12-14, 17, and 28-29 avoid Allan.

Item 3 (§ 103 based on Grann):

Claims 15, 16 and 19 are rejected as being unpatentable (obvious) over Grann.

These claims depend from claims 1 and 17, and we urge that they should be allowable for at least the same reasons.

Item 4 (Allowable Subject Matter):

Claims 20 and 21 have been indicted to be allowable if rewritten to include the limitations of base and intervening claims. The base claim here is claim 17 and it has been amended herein. That amendment is narrowing, however, based on subject matter in other dependent claims, and should not change the status of claims 20 and 21.

Item 5 (Response to Arguments):

The Action here indicates that prior rejections over Nichols are withdrawn. We thank the Examiner for this indication.

The Action next ("*Applicant first states ...*") discusses our reasoning that Grann is optically active in only one dimension. The Examiner's remarks show that she has clearly grasped much, but is still confusing physical and optically active dimensions. In Fig. 1 of Grann the light travels in one physical dimension and the device is active in one optical dimension. In FIG. 3 of Grann the light travels in two physical dimensions but the device is still only optically active in one "*dimension*" (a term we very much regret having used in this application). The reflection of the light into a second physical dimension in FIG. 3 of Grann does not involve or change anything with respect to the optical characteristic of the light. For example, if the device 10 in FIG. 1 and the first structure 10a in FIG. 3 are designed to reflect $\lambda 1$, they (10 and 10a) both work the same with respect to the optical characteristics of the light. They both effect only $\lambda 1$, and they both do this using an intra groove-insert surface-to-surface separation tailored to work with $\lambda 1$. The diverting reflection in the first structure 10a in FIG. 3 has nothing to do with the optical characteristics of the light or optically active dimension (singular in Grann). The reflected light is the same, it is just going in a different physical direction in FIG. 3.

The Action next ("*Applicant second states ...*") discusses our definition of a "*grid of cells*" and limitations in specification discussion/definition and inferring limitations into claims. We do not agree with respect to definition, and we feel that the case law cited, and generally,

supports this. However, this should now be moot by virtue of our moving limitations of the dependent claims into claims 1 and 17.

The Action next ("*Applicant third states ...*") discusses our contention that Grann is only optically relevant in one dimension. This is the one-dimensionally optically active discussion again, and the confusion with reflection is apparent here as well. This should now be moot by virtue of our having moved limitations of the dependent claims into claims 1 and 17.

The Action next ("*Applicant fourth states ...*") discusses withdrawal of rejections over Grann with respect to cubical gratings. We thank the Examiner for this.

The Action next ("*Applicant fifth states ...*") discusses surface-to-surface and cell-to-cell separations and Grann. This defers to reworded rejection language in this Action and we similarly defer to our remarks thereon, elsewhere in this response.

The Action next ("*Applicant sixth states ...*") discusses how Grann can handle multiple wavelengths in a manner perceived to read on the claimed invention. Firstly, this confuses action by a single grid of cells with that of a plurality of distinct devices. Secondly, this now should be moot by virtue of our moving dependent claim limitations into claims 1 and 17 for other reasons.

Lastly, rejections over Matsuda are withdrawn. We thank the Examiner for this.

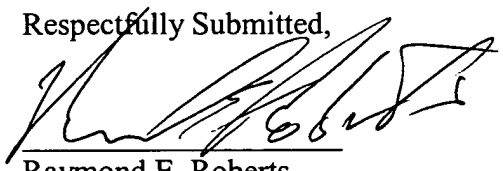
CONCLUSION

Applicant has endeavored to put this case into complete condition for allowance. It is thought that the §102 rejections are addressed by amendment or else shown to be unfounded on the prior art references cited, and that the §103 rejections have also been addressed by amendment or have been completely rebutted. Applicant therefore asks that all objections and rejections now be withdrawn and that allowance of all claims presently in the case be granted.

Intellectual Property Law Offices
1901 S. Bascom Ave., Suite 660
Campbell, CA 95008

Telephone: 408.558.9950
Facsimile: 408.558.9960
E-mail: RRoberts@iplo.com

Respectfully Submitted,



Raymond E. Roberts
Reg. No.: 38,597

Customer No. 32112